

## Contributions on the wolf spider fauna (Araneae, Lycosidae) of Gran Canaria (Spain)

M. Hepner and H. F. Paulus

Department of Evolutionary Biology,  
University of Vienna,  
Althanstrasse 14, A-1090 Vienna, Austria

### Summary

Collecting trips on Grand Canaria from 1990 to 2002 yielded eight lycosid species from five genera: *Alopecosa artenarensis*, *Alopecosa grancanariensis*, *Alopecosa thaleri*, *Arctosa lacustris*, *Arctosa similis*, *Hogna ferox*, *Pardosa proxima* and *Wadicosa fidelis*. One species was recorded for the first time from Gran Canaria: *W. fidelis*. The results of this study differ from previous lists of the lycosid fauna in the literature. For example, the species *Alopecosa obscura*, *Hogna canariana* and *Trochosa lucasi* were not found during our collecting trips. The *H. canariana* and *Arctosa cinerea* of previous studies have presumably been misidentified.

### Introduction

The spider fauna of the Canary Islands has been the subject of numerous studies (e.g. Simon, 1882; Bösenberg, 1895; Strand, 1911; Denis, 1941; Schmidt, 1968, 1973, 1980, 1990; Wunderlich, 1987, 1992), but only one focuses in particular on the island of Gran Canaria (Schmidt, 1973). Our knowledge of the wolf spiders of the Canary Islands is thus still very incomplete and many species are only known from one sex (Wunderlich, 1992).

Lucas (1838) listed two lycosid spiders for the Canary Islands. Towards the end of the 19th century three lycosid species were described from there (Simon, 1882). About 100 years later, 16 species were listed for the islands, 12 of which were considered endemic (Wunderlich, 1987). Oromí & Garcia (2001) and Oromí *et al.* (2004) arrived at a total of 22 lycosid species, 16 of which were endemic for the Canary Islands. In 2004 nine of these species (five of which are endemic) were reported on Gran Canaria (Oromí *et al.*, 2004): *Alopecosa artenarensis* Wunderlich, 1992, *A. grancanariensis* Wunderlich, 1992, *A. obscura* Schmidt, 1980, *Arctosa cinerea* (Fabricius, 1777), *A. lacustris* (Simon, 1876), *Hogna canariana* (Roewer, 1960), *H. ferox* (Lucas, 1883), *Trochosa lucasi* (Roewer, 1951) and *Pardosa proxima* (C. L. Koch, 1847). The intention of this paper is to provide an overview of the lycosid spiders found on Gran Canaria during several collecting trips from 1990 to 2002.

### Material and methods

The material described here was collected by Dr H. F. Paulus between 1990–2001 and by M. Hepner in 2002. All collections were made by hand. The material was stored in ~70% alcohol. About 550 individuals were examined; 131 of these were juvenile and could not be used in this study. Vulva preparations were made by removing the epigynes with a needle and boiling in 4% KOH. To determine the species the works by Knülle

(1959), Lugetti & Tongiorgi (1965), Fuhn & Niculescu-Burlacu (1971), Tongiorgi (1966), Wunderlich (1987, 1992), Marusik *et al.* (2003) and Buchar *et al.* (2006) were consulted. Nomenclature follows Platnick (2008). Information on the worldwide distribution of the species is based on the world spider catalogue (Platnick, 2008). Information on their distribution on the various islands of the Canary Islands was extracted from Oromí *et al.* (2004) and is given in parentheses. The individual locations (Fig. 1) where the spiders were collected are listed in Table 1. Only the numbers of the collecting sites (as given in Fig. 1 and Table 1) and months of collecting are indicated in the text.

Abbreviations and symbols used: \*\*=first record for Gran Canaria; \*=male unknown; tl=total length; cl=carapace length; cw=carapace width; Tr=trochanter; Fe=femur; Pa=patella; Ti=tibia; Mt=metatarsus; Ta=tarsus; Cy=cymbium. All measurements are in mm.

### Results

The collected material included eight species from five genera, details of which are listed below.

#### \**Alopecosa artenarensis* Wunderlich, 1992 (Figs. 2–3)

*Alopecosa artenarensis* Wunderlich, 1992: 444, fig. 663; Oromí *et al.*, 2004: 168.

*Distribution*: Canary Islands (endemic to Gran Canaria).

*Locations* (Fig. 1, Table 1): 7: February 1994 (1♀), December 1998 (1♀); 8: February 1996 (2♀); 9: January 1999 (9♀).

*Habitat*: This silvicolous species is found in burrows, mostly in pine woods. The entrance of the burrow is more or less circular and camouflaged with pine needles. Males of this species have continued to elude discovery.

*Description: Female*: tl  $18.38 \pm 2.21$ ; cl  $8.0 \pm 0.79$ ; cw  $5.92 \pm 0.89$ . Carapace dark reddish brown, apically darker; wide, light coloured median band; lateral bands light coloured, clearly visible. Chelicerae strong, dark reddish brown, sometimes nearly black. Sternum dark. Abdomen dorsally and ventrally dark brown; dorsally with dark cardiac mark, first half of which surrounded by area of light hairs. Legs reddish brown with short dark hairs; Mt and Ta of legs I and II with dense scopulae. Epigyne and vulva as in Figs. 2–3.

*Male*: Unknown.

#### *Alopecosa grancanariensis* Wunderlich, 1992 (Figs. 4–7)

*Alopecosa grancanariensis* Wunderlich, 1992: 448, figs. 683–687; Oromí *et al.*, 2004: 168.

*Distribution*: Canary Islands (endemic to Gran Canaria).

*Locations* (Fig. 1, Table 1): 5: February 1994 (3♂ 5♀); 7: November 1994 (1♂ 2♀), February 1996 (9♂ 10♀), December 1998 (9♀); 8: February 1994 (2♂), February 1996 (1♂ 1♀), February 1997 (4♂ 5♀), January 1999 (1♂ 2♀); 9: January 1999 (1♂ 4♀); 13: January 1999 (2♀); 14: February 1996 (2♂ 4♀).

*Habitat:* This silvicolous species is the most common *Alopecosa* on the island. It occurs in nearly every pine wood area, where it runs freely on the ground.

*Description: Male:* tl  $6.85 \pm 1.03$ ; cl  $3.5 \pm 0.37$ ; cw  $2.49 \pm 0.27$ . Carapace brown with yellowish brown median band; lateral bands yellowish brown, small, sometimes divided into three marks. Sternum brownish with light median area. Abdomen dorsally brown with light median band; with dark triangular markings behind cardiac mark; ventrally light coloured, sometimes with median dark band. Legs brown with dark annulations. Male palp as in Fig. 4, detail of tegular apophysis as in Fig. 5.

*Female:* tl  $9.6 \pm 1.48$ ; cl  $4.2 \pm 0.67$ ; cw  $2.98 \pm 0.3$ . Coloration and markings as in male. Female genitalia (Figs. 6–7): both epigyne and vulva show high variability; copulatory duct varies from C- to S-shape (Fig. 7).

### *Alopecosa thaleri* Hepner & Paulus, 2007

*Alopecosa thaleri* Hepner & Paulus, 2007: 43, figs. 1–9.

*Distribution:* Endemic to Gran Canaria.

*Locations* (Fig. 1, Table 1): 8: February 1997 (1♂); 9: January 1999 (1♀).

*Habitat:* A very rare species of the genus. Like the other *Alopecosa* species, this also occurs in the pine woods of Gran Canaria. Known only from single male and female specimens (Hepner & Paulus, 2007).

*Description: Male:* tl 9.1; cl 4.7; cw 3.3. Carapace reddish brown; light median and lateral bands. Chelicerae dark reddish brown. Sternum brownish, with lighter median area. Abdomen reddish brown with large, light median band with dark cardiac mark and adjacent triangular marks. Legs brownish. Palp as shown in Hepner & Paulus (2007).

*Female:* tl 10.8; cl 5.4; cw 4.0. Coloration brownish. Markings not as clearly visible as in male. Epigyne and vulva as shown in Hepner & Paulus (2007).

### *Arctosa lacustris* (Simon, 1876) (Figs. 8–10)

*Lycosa lacustris* Simon, 1876: 280.

*Arctosa lacustris:* Lugetti & Tongiorgi, 1965: 201, figs. XII.1–4; Wunderlich, 1987: 235; 1992: 453; Oromí *et al.*, 2004: 168; for full bibliography see Platnick (2008).

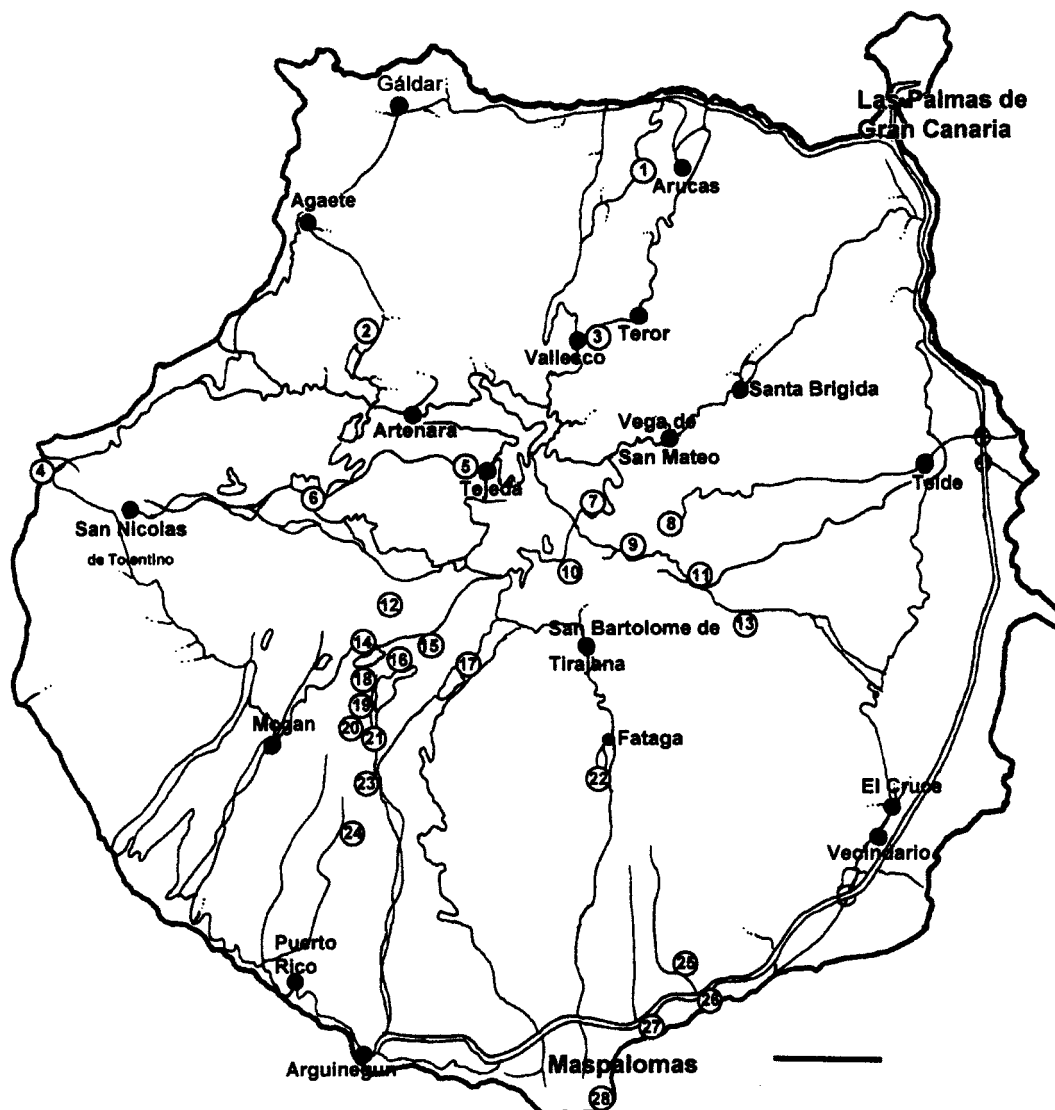


Fig. 1: Map of Gran Canaria showing the collection sites 1–28. Descriptions of the locations are given in Table 1. Scale line=5 km.

*Distribution:* Mediterranean, Canary Islands (Gran Canaria, Tenerife and La Gomera).

*Locations* (Fig. 1, Table 1): 15: August 2000 (2♀); 17: October 1993 (1♀), February 1997 (1♂ 1♀); 18: July 1999 (2♂ 2♀); 19: July 2001 (1♂ 2♀); 21: July 1999 (1♂ 2♀); 23: September 1990 (2♀).

*Habitat:* This species prefers damp areas near the waterline which have numerous boulders and sparse vegetation. Knülle (1959) reported it as occurring in damp, unshaded boulder-areas next to water, and as highly associated with bank areas. Strand (1911) recorded this species from the island of Gomera under stones by a brook. We found it close to reservoirs and also by small pools.

*Description: Male:* tl  $6.13 \pm 1.09$ ; cl  $3.48 \pm 0.26$ ; cw  $2.58 \pm 0.13$ . Carapace brownish, with dark area around eyes. Sternum brownish, with lighter median area. Abdomen dorsally brown with yellowish brown spots, ventrally light coloured. Legs yellowish brown with dark annulations. Male palp as in Fig. 8.

*Female:* tl  $7.7 \pm 1.39$ ; cl  $3.8 \pm 0.32$ ; cw  $2.85 \pm 0.26$ . Often lighter coloured than male. Markings as in male. Epigyne and vulva as in Figs. 9–10.

#### *Arctosa similis* Schenkel, 1938 (Figs. 11–13)

*Arctosa similis* Schenkel, 1938: 13, fig. 5.

*Arctosa cinerea:* Oromí *et al.*, 2004: 168.

*Arctosa similis:* Buchar *et al.*, 2006: 304, figs. 3–4, 10, 12, 19–20, 27–30; for full bibliography see Platnick (2008).

*Distribution:* Canary Islands, Morocco, Portugal to Croatia.

*Locations* (Fig. 1, Table 1): 6: February 1997 (1♂); 12: August 2002 (1♂); 14: February 1997 (4♂ 1♀), July 2001 (1♂ 1♀); 16: February 1992 (1♂); 17: February 1997 (1♂ 2♀), July 2002 (1♀), August 2002 (1♂); 20: February 1994 (2♂ 3♀).

*Habitat:* This species prefers areas near the waterline which may be sandy or rich in rubble (Knülle, 1959), but apparently not on the seashore (Buchar *et al.*, 2006). We also found it close to reservoirs.

*Description: Male:* tl  $10.53 \pm 1.73$ ; cl  $5.13 \pm 0.77$ ; cw  $4.18 \pm 0.66$ . Carapace varies between greyish and dark brown. Sternum light brown with dark rim. Abdomen dorsally dark brown with yellowish brown spots and dark cardiac mark, anterior half of mark surrounded by lighter area; ventrally light yellowish brown. Legs yellowish brown with dark annulations (sometimes not clearly visible); Mt and Ta darker. Male palp as in Fig. 11.

*Female:* tl  $12.37 \pm 1.37$ ; cl  $5.72 \pm 0.43$ ; cw  $4.58 \pm 0.19$ . Coloration and markings as in male. Epigyne and vulva as in Figs. 12–13.

#### *Hogna ferox* (Lucas, 1838) (Figs. 14–16)

*Lycosa ferox* Lucas, 1838: 26; Simon, 1882: 309.

*Trochosa aquila* Bösenberg, 1895: 9, fig. 1.

*Tarentula ferox:* Strand, 1916: 39.

*Lycorma ferox:* Schmidt, 1975a: 229.

*Hogna ferox:* Wunderlich, 1992: 458, figs. 716–719; Oromí *et al.*, 2004: 168.

*Lycosa ferox:* Wunderlich, 1984: 27, fig. 10; for full bibliography see Platnick (2008).

Site	Location	m.a.s.l.	Habitat
1	north of Cambalud	~200 m	reservoir, near waterline
2	Embalse de Lugerejos	~850 m	reservoir, near waterline
3	Balcon de Zamora	~700 m	pine-wood
4	Playa de la Aldea	~sea level	waterside, pool with brackish water
5	Tejeda	~1250 m	pine-wood
6	Embalse de El Parallilo	~350 m	reservoir, near waterline
7	above Cueva Grande	~1650 m	pine-wood
8	Rincon/Tentenguada	~1100 m	pine-wood
9	Presa de Cuevas Blancas	~1600 m	reservoir, near waterline
10	Pozo de la Nieves	~1600 m	pine-wood
11	3 km east of Presa de Cuevas Blancas	~1400 m	pine-wood
12	Payonales	~1000 m	reservoir, near waterline
13	west of La Passadilla/Ingenio	~900 m	pine-wood
14	Embalse de la Cueva de las Ninas	~890 m	reservoir, near waterline
15	road from Soria to Casa de la Data	~700 m	small pools in canyons
16	Embalse de Soria	~900 m	reservoir, near waterline
17	Embalse de Chira (reservoir)	~900 m	reservoir, near waterline
18	pool above Soria	~800 m	small pools in canyons
19	canyons north of Soria	~700 m	small pools in canyons
20	small reservoir near Montana Vista de Soria	~950 m	small pools in canyons, wet walls
21	south of El Brusco/Soria	~900 m	small pools in canyons
22	Embalse de Fataga	~450 m	reservoir, near waterline
23	Barranco de Arguineguin	~900 m	canyon with small pools
24	Lomo de Cortadores	~400 m	canyon with small pools
25	Canon de Aguila, near Maspalomas	~sea level	pool
26	Playa de Aguila	~sea level	wet area near shore
27	San Augustin (sewage-works)	~sea level	wet area near shore
28	Maspalomas/Faro	~sea level	brackish seepage water

Table 1: List of locations where wolf spiders were collected, with elevation (m) above sea level and habitat description. Site numbers correspond to those in Fig. 1.

*Distribution:* Mediterranean, Canary Islands (El Hierro?, La Palma?, La Gomera, Tenerife, Gran Canaria, Fuerteventura and Lanzarote?).

*Locations* (Fig. 1, Table 1): 4: January 1992 (1♀), February 1996 (5♀); 6: July 2002 (1♂); 9: January 1999 (1♂); 14: February 1996 (8♂ 6♀), February 1997 (1♂), December 1998 (2♂ 1♀), August 2000 (1♂), July 2002 (2♂); 17: July 2002 (3♀), August 2002 (1♂ 1♀); 24: July 1999 (1♀); 25: July 1999 (1♂ 1♀); 26: February 1997 (3♂ 1♀); 27: December 1998 (1♀).

*Habitat:* *Hogna ferox* occurs in boulder-areas at some distance from the waterline, mostly under large stones (Strand, 1911). Schmidt (1968) found the species in a banana plantation on Tenerife and suggested that it is limited to the succulent zone. On Gran Canaria it was found from sea level up to 1600 m, always close to water and mostly under stones.

*Description: Male:* tl  $15.2 \pm 1.86$ ; cl  $7.8 \pm 0.92$ ; cw  $6.4 \pm 0.74$ . Carapace brownish with ochre median and lateral bands; median band with two, apically directed, lateral processes. Sternum ochre. Abdomen brownish with light median band, behind brown cardiac mark triangular marks of same colour (sometimes not clearly visible); ventrally light yellowish brown. Legs yellowish brown, becoming darker distally. Male palp as in Fig. 14.

*Female:* tl  $19.9 \pm 2.02$ ; cl  $8.6 \pm 1.45$ ; cw  $7.2 \pm 1.28$ . Often lighter coloured than male. Markings as in male. Epigyne and vulva as in Figs. 15–16.

### *Pardosa proxima* (C. L. Koch, 1847) (Figs. 17–19)

*Lycosa proxima* C. L. Koch, 1847; 53, figs. 1453–1454.

*Pardosa proxima:* Tongiorgi, 1966: 306, figs. 146–147, 156–157; Roberts, 1985: 134, fig. 59d; Wunderlich, 1987: 235, fig. 628; Oromí *et al.*, 2004: 168.

*Pardosa esperanzae* Schmidt, 1975b: 505, fig. 3.

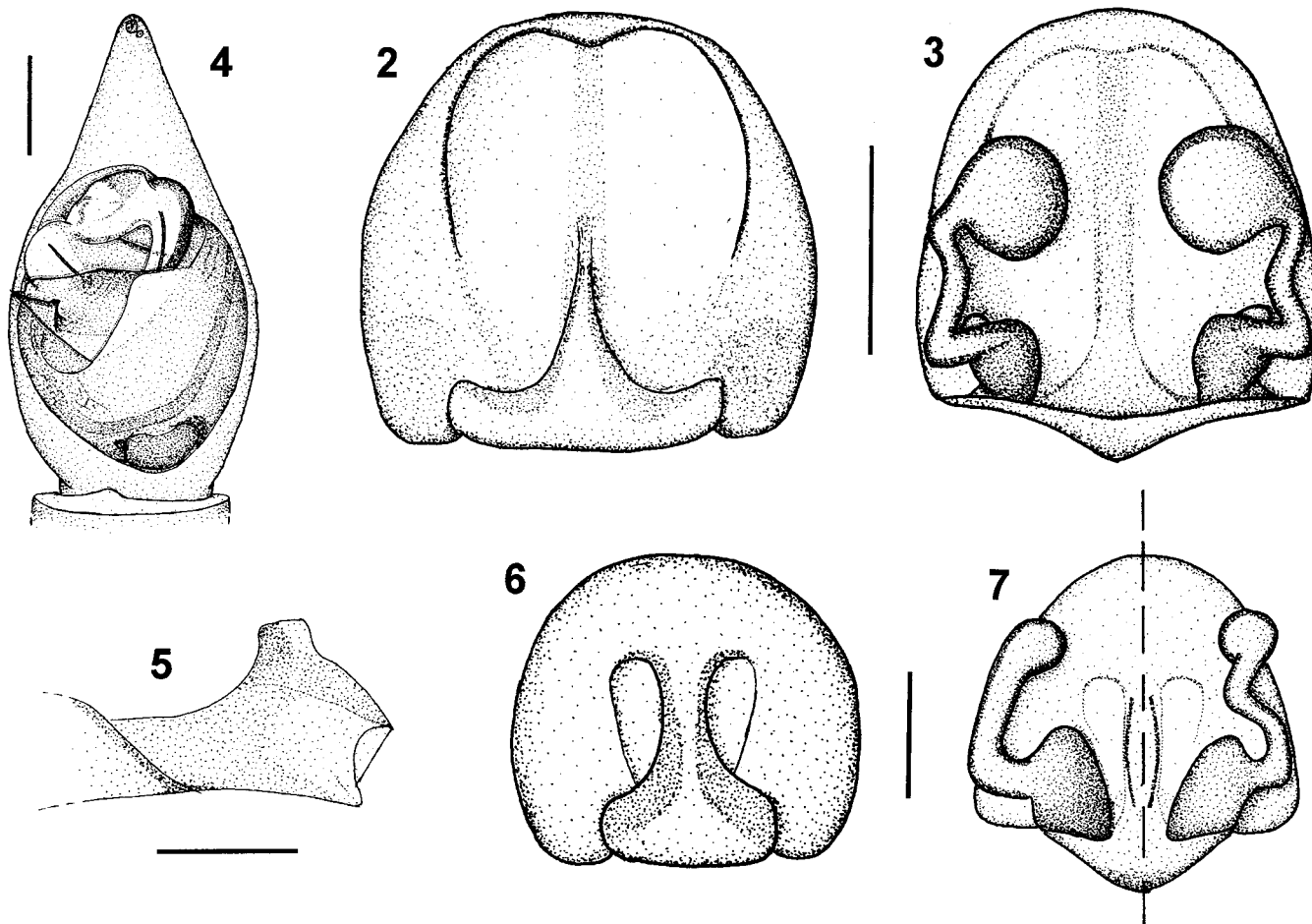
*Pardosa pseudoproxima* Wunderlich, 1987; 235, fig. 629; for full bibliography see Platnick (2008).

*Distribution:* Palaearctic, Azores, Canary Islands (El Hierro, La Palma, La Gomera, Tenerife and Gran Canaria).

*Locations* (Fig. 1, Table 1): 3: February 1997 (3♂ 5♀), March 1998 (1♀).

*Habitat:* The species mostly prefers meadows, where it is related to moist areas (Helvesen & Harms, 1969). Occurrences along exposed stream beds, on edges of ponds, lakes, and in swampy areas (Tongiorgi, 1966; Roberts, 1995) confirm this. We found all specimens of this species of *Pardosa* in a pine wood in the north of the island.

*Description: Male:* tl  $4.8 \pm 0.26$ ; cl  $2.5 \pm 0.1$ ; cw  $1.97 \pm 0.08$ . Carapace brown with small light median



Figs. 2–7: 2–3 *Alopecosa artenarensis*. 2 Epigyne, ventral; 3 Vulva, dorsal. 4–7 *Alopecosa grancanariensis*. 4 Right male palp, ventral; 5 Left male palp, distal part of tegular apophysis, apical; 6 Epigyne, ventral; 7 Vulva, dorsal; two most extreme forms of the vulva are shown in the left and right halves of the drawing; all kinds of intermediates occur between these two extremes. Scale lines=0.5 mm (2–3), 0.2 mm (4, 6–7), 0.1 mm (5).

band; lateral bands broken into two or three light marks. Sternum brown with small, apical band extending slightly more than half length of sternum. Abdomen dorsally brownish with light cardiac mark, behind mark pairs of light markings fused posteriorly; ventrally brown with median triangular mark surrounded by light area. Legs brownish with unclear annulations. Male palp as in Fig. 17.

*Female*: tl  $6.4 \pm 1.0$ ; cl  $2.99 \pm 0.21$ ; cw  $2.33 \pm 0.1$ . Lighter coloured than male. Markings as in male. Epigyne and vulva as in Figs. 18–19.

**\*\**Wadicosa fidelis* (O. P.-Cambridge, 1872) (Figs. 20–22)**

*Lycosa fidelis* O. P.-Cambridge, 1872: 319.

*Pardosa venatrix*: Buchar, 1980: 88, figs. 28–29.

*Pardosa fidelis*: Wunderlich, 1987: 236.

*Wadicosa fidelis*: Wunderlich, 1992: 467, figs. 727–728; Oromí *et al.*, 2004: 168; for full bibliography see Platnick (2008).

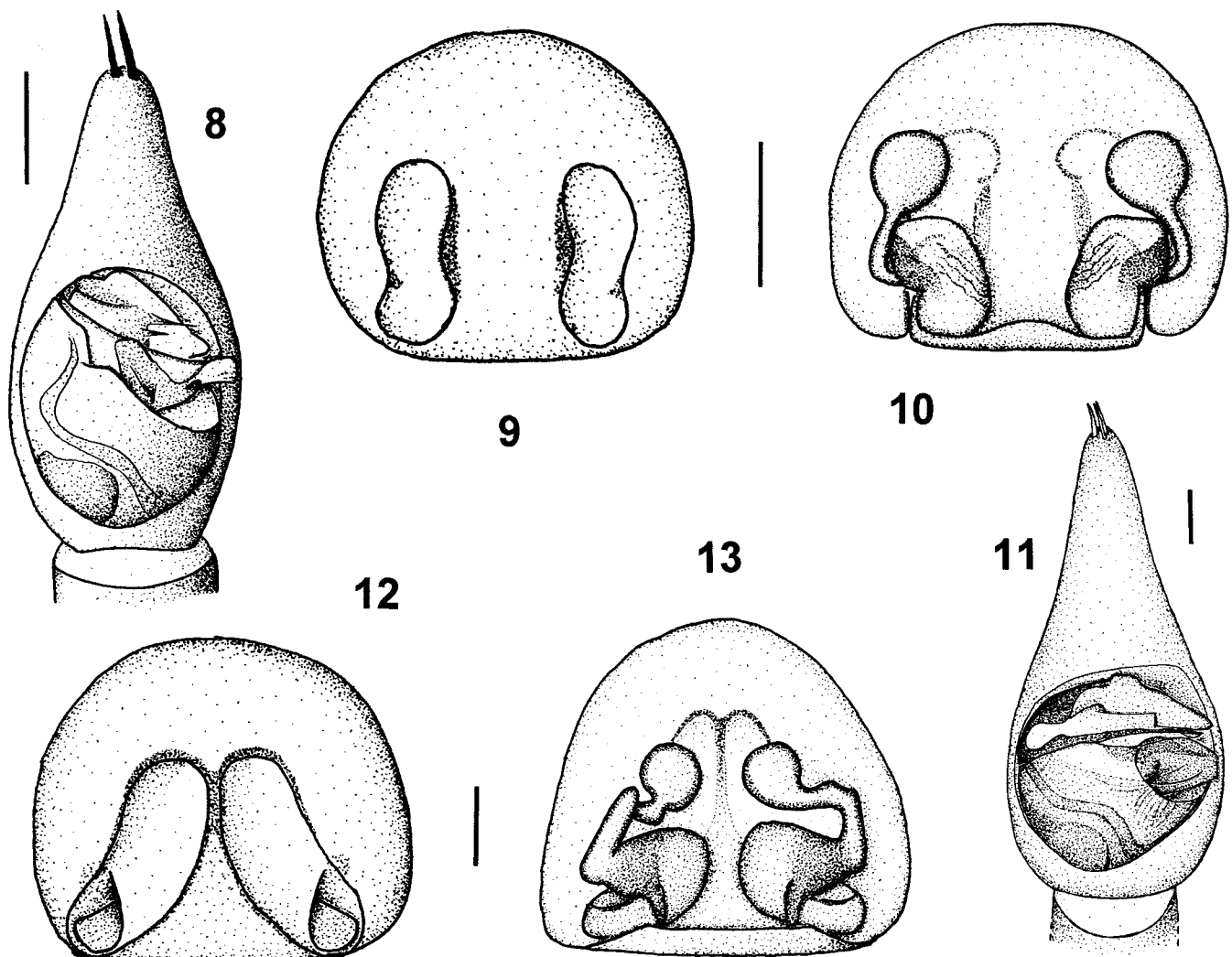
*Distribution*: Palaearctic, Canary Islands (La Palma, Tenerife).

*Locations* (Fig. 1, Table 1): 1: September 1993 (3♂ 8♀); 2: July 2002 (2♂); 4: September 1992 (1♀); 6: February 1997 (7♂ 5♀), July 2002 (1♀); 12: July 2002 (1♂ 2♀),

August 2002 (1♂); 14: February 1996 (5♂ 3♀), February 1997 (4♂ 2♀), July 1999 (3♂ 6♀), July 2002 (4♂ 1♀); 15: August 2000 (4♂ 8♀); 16: February 1992 (3♂ 5♀), August 2000 (7♂ 20♀); 17: October 1993 (4♂), February 1997 (3♀), July 2002 (4♂ 3♀), August 2002 (10♂ 4♀); 19: July 2001 (1♂ 1♀); 20: July 1994 (4♀); 22: August 2002 (2♂ 1♀); 27: August 2000 (1♂ 3♀); 28: September 1993 (4♂ 18♀), February 1994 (7♂ 3♀).

*Habitat*: *Wadicosa fidelis* is the commonest lycosid spider living near water. It is commonly encountered running about on damp ground close to the waterline of nearly every reservoir on Gran Canaria. Sometimes it can be seen running upon the water surface.

*Description*: *Male*: tl  $6.2 \pm 0.6$ ; cl  $3.2 \pm 0.36$ ; cw  $2.6 \pm 0.21$ . Coloration extremely variable, varying between dark brown, grey and nearly black (Wunderlich, 1992); lighter area around fovea. Sternum dark. Abdomen with same coloration as carapace, cardiac mark darker than rest; lateral to cardiac mark light markings extend posteriorly; ventrally lighter. Coloration of legs variable; annulated (not always clearly visible); Tr, Fe and Cy of palp dark, Pa and Ti yellowish white with short white hairs. Male palp as in Fig. 20.



Figs. 8–13: **8–10** *Arcctosa lacustris*. **8** Left male palp, ventral; **9** Epigyne, ventral; **10** Vulva, dorsal. **11–13** *Arcctosa similis*. **11** Left male palp, ventral; **12** Epigyne, ventral; **13** Vulva, dorsal. Scale lines=0.2 mm.

*Female*: tl  $7.7 \pm 1.01$ ; cl  $3.4 \pm 0.38$ ; cw  $2.9 \pm 0.37$ . Coloration mostly lighter than in male but also variable. Markings as in male. Epigyne and vulva as in Figs. 21–22.

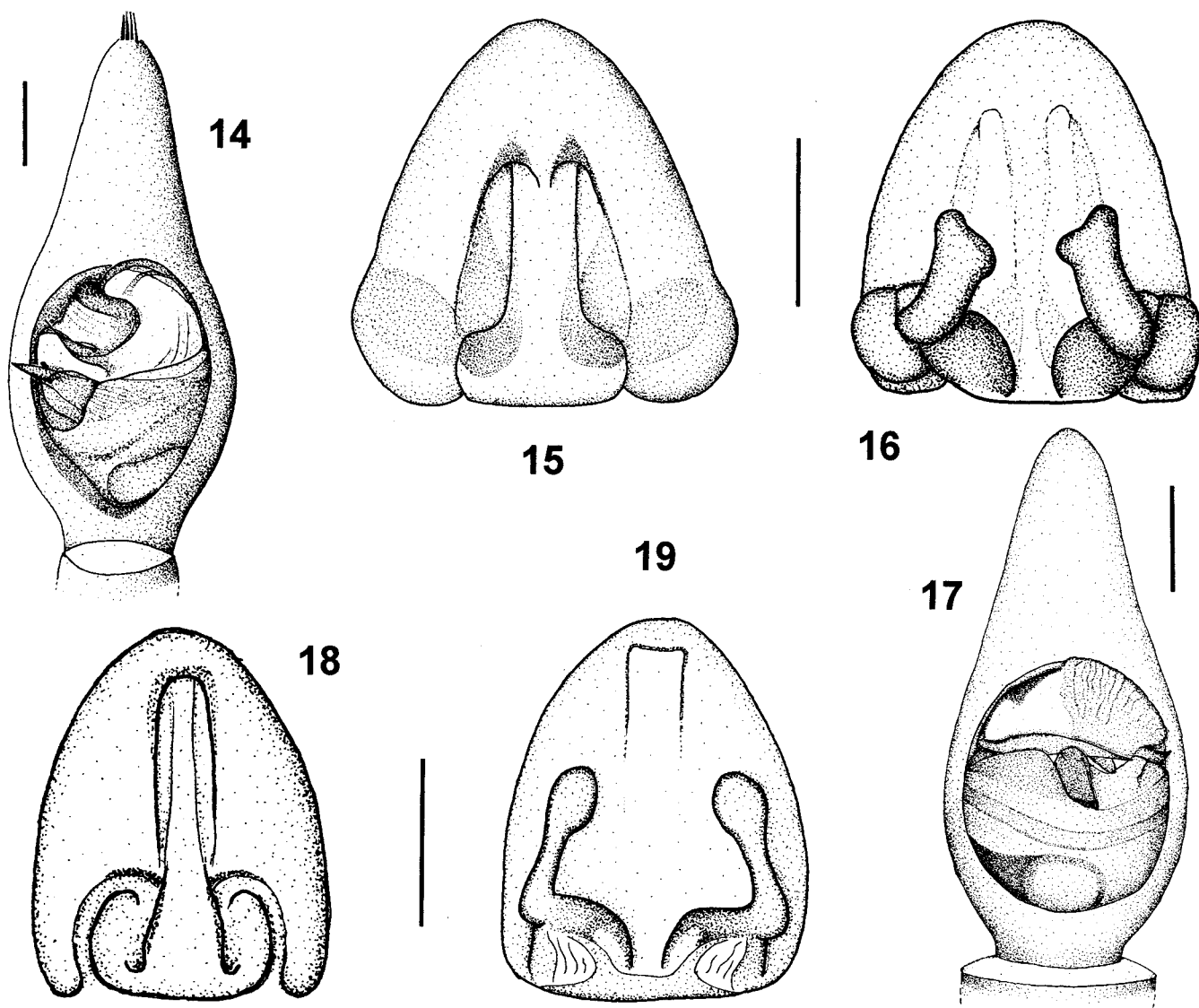
### Discussion

The most recent work on the lycosid spiders of the Canary Islands (Oromí *et al.*, 2004) listed nine species from five genera for Gran Canaria: *Alopecosa artenarensis* Wunderlich, 1992, *A. grancanariensis* Wunderlich, 1992, *A. obscura* Schmidt, 1980, *Arctosa cinerea* (Fabricius, 1777), *A. lacustris* (Simon, 1876), *Hogna canariana* (Roewer, 1960), *H. ferox* (Lucas, 1883), *Pardosa proxima* (C. L. Koch, 1847) and *Trochosa lucasi* (Roewer, 1951). Among these, we found *Alopecosa artenarensis*, *A. grancanariensis*, *Arctosa lacustris*, *Hogna ferox* and *Pardosa proxima*. No individuals of *Alopecosa obscura*, *Arctosa cinerea*, *Hogna canariana* or *Trochosa lucasi* were caught during our collecting (unfortunately no references to sources are given in the work of Oromí & García (2001) and Oromí *et al.* (2004)). On the other

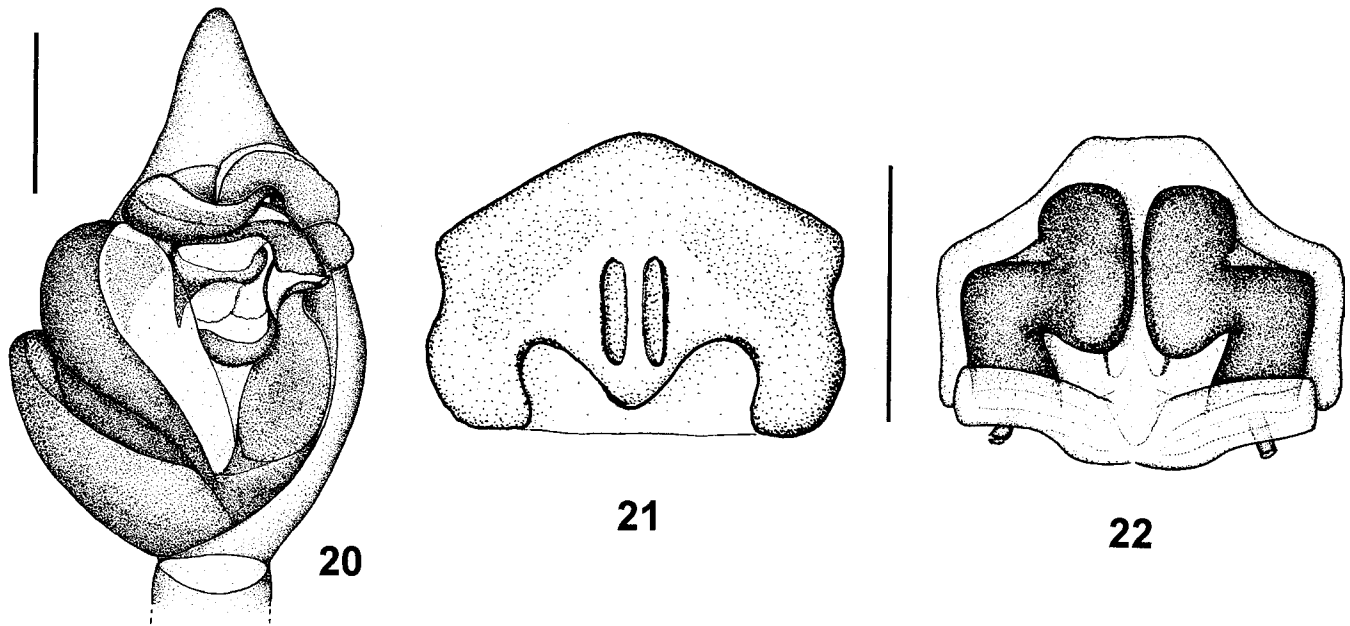
hand, we found *Alopecosa thaleri*, *Arctosa similis* and *Wadicosa fidelis*, the last not previously reported from Gran Canaria (for *A. similis* see below).

Apart from the works of Oromí & García (2001) and Oromí *et al.* (2004), *A. obscura* has only been mentioned for El Hierro (Schmidt, 1980; Wunderlich, 1992). As stated above, the source of information about the occurrence of this species on Gran Canaria remains unclear. Also, the Spanish arachnologist Nayra Txasko (pers. comm.) agrees with our suggestion that *A. obscura* does not occur on Gran Canaria.

The record for *A. cinerea* is dubious: Simon (1898) first mentioned *A. cinerea* for Gran Canaria. Since then, the species has been listed by several authors (Denis, 1941; Schmidt, 1973; Oromí & García, 2001; Oromí *et al.*, 2004). However, none of these authors found this species themselves. As mentioned above, we did not find any individuals of *A. cinerea*, but we found *A. similis*. In their revision of several species of the genus *Arctosa*, Buchar *et al.* (2006) pointed out that the figure of the epigyne of *A. cinerea* given by Simon (1937: fig. 1749) probably refers to *A. similis*. Thus, following the findings



Figs. 14–19: 14–16 *Hogna ferox*. 14 Right male palp, ventral; 15 Epigyne, ventral; 16 Vulva, dorsal. 17–19 *Pardosa proxima*. 17 Left male palp, ventral; 18 Epigyne, ventral; 19 Vulva, dorsal. Scale lines = 0.5 mm (14–16), 0.2 mm (17–19).



Figs. 20–22: *Wadicosa fidelis*. **20** Left male palp, ventral; **21** Epigyne, ventral; **22** Vulva, dorsal. Scale lines=0.5 mm.

of Buchar *et al.* (2006) we conclude that *Arctosa cinerea* mentioned for Gran Canaria by Simon (1898) refers in fact to *Arctosa similis*.

*Trochosa lucasi*, a species of which only the female is known, was first described for the Canary Islands by Lucas (1838), sub *Lycosa pelliona*. Drawings of this species can be found in Simon (1882: 285, pl. 8, fig. 12) and in Roewer (1960: 932, figs. 517a–b). As mentioned above we did not find any specimens of *Trochosa lucasi* during our collecting.

*Wadicosa fidelis* has, until now, only been listed for La Palma and Tenerife (Wunderlich, 1987, 1992; Oromí & García, 2001; Oromí *et al.*, 2004) and not for Gran Canaria. It is unlikely that it could have been overlooked, because of its high frequency of occurrence. We suspect that this species has only recently been introduced to Gran Canaria.

*Hogna canariana* was described from Gran Canaria by Roewer (1960). In the tube containing the holotype (Senckenberg Museum: 9911635-RII/11635-138) we found a note written by Dr Wunderlich in which he assumed that the specimen could be *Hogna insularum* (Kulczyński, 1899), a species known only from Madeira. This assumption must be considered in a separate work.

The variation in the genital characters of female *A. grancanariensis* is extremely high. However, we conclude, based on the following considerations, that nonetheless all variants belong to one species: (i) All kinds of intermediates exist between the two extreme conditions shown in Fig. 7; occasionally, the two copulatory ducts of the same individual show variation, e.g. one duct may be C-shaped while the other is slightly S-shaped. (ii) Variation in female genitalia is very common in *Alopecosa* species (Nayra Txasko, pers. comm.). The main structures of the pedipalp (apical part, embolus, tegular apophysis, etc.) of our *A. grancanariensis* male specimens match the original drawing of Wunderlich (1992: 592, fig. 683). However, the detailed drawing of the distal part of the tegular apophysis (Wunderlich, 1992:

592, fig. 684) does not show the same features as we found in our individuals (Fig. 5). We assume that these differences might be caused by different drawing angles, although we were not able to reproduce the same angle as given in Wunderlich (1992: fig. 684). Unfortunately, as we did not check Wunderlich's males, we must tentatively consider our male specimens to be members of *A. grancanariensis*.

To recapitulate, it must be stressed that the occurrence of *A. obscura* and *T. lucasi* on Gran Canaria has yet to be positively demonstrated. Future work should resolve this question.

#### Acknowledgements

Special thanks are due to N. Milasowszky and M. Strodl for commenting on the manuscript and to J. Plant for checking the English text. We also thank Nayra Txasko for inspiring and helpful comments. We are also very grateful to the Cabildo de Gran Canaria, Area de Medio Ambiente, for authorising the collection of wolf spiders on Gran Canaria.

#### References

- BÖSENBERG, W. 1895: Beitrag zur Kenntnis der Arachniden-Fauna von Madeira und den Canarischen Inseln. *Abh. naturw. Ver. Hamb.* **13**: 1–13.
- BUCHAR, J. 1980: Lycosidae aus dem Nepal-Himalaya. II. Die *Pardosa nebulosa*- und *P. venatrix*-Gruppe (Araneae: Lycosidae: Pardosinae). *Senckenberg. biol.* **61**: 77–91.
- BUCHAR, J., KNOFLACH, B. & THALER, K. 2006: On the identity of *Arctosa variata* C. L. Koch and *Arctosa similis* Schenkel, with notes on related species (Araneae: Lycosidae). *Bull. Br. arachnol. Soc.* **13**: 329–336.
- CAMBRIDGE, O. P.- 1872: General list of the spiders of Palestine and Syria, with descriptions of numerous new species, and characters of two new genera. *Proc. zool. Soc. Lond.* **1871**: 212–354.
- DENIS, J. 1941: Les Araignées des îles Canaries. *Annl. Soc. ent. Fr.* **110**: 105–130.

- FUHN, I. E. & NICULESCU-BURLACU, F. 1971: Fam. Lycosidae. *Fauna Republicii Socialiste România* (Arachnida) **5**(3): 1–253.
- HELVERSEN, O. von & HARMS, K.-H. 1969: Zur Spinnenfauna Deutschlands, VII. Für Deutschland neue Wolfspinnen der Gattungen *Pirata* und *Pardosa* (Arachnida: Araneae: Lycosidae). *Senckenberg. biol.* **50**(5/6): 367–375.
- HEPNER, M. & PAULUS, H. F. 2007: *Alopecosa thaleri*, a new wolf spider from Gran Canaria (Araneae, Lycosidae). *Bull. Br. arachnol. Soc.* **14**(1): 43–45.
- KNÜLLE, W. 1959: Über italienische *Arctosa*-Arten (Araneae, Lycosidae). *Arch. zool. It.* **45**: 251–270.
- KOCH, C. L. 1847: *Die Arachniden* **14**: 1–136. Nürnberg.
- LUCAS, H. 1838: Arachnides, Myriapodes et Thysanoures. In P. Barker-Webb & S. Berthelot (eds), *Histoire naturelle des îles Canaries* **2**(2): 19–52, pls. 6–7. Paris.
- LUGETTI, G. & TONGIORGI, P. 1965: Revisione delle specie italiane dei generi *Arctosa* C. L. Koch e *Tricca* Simon con note su una *Acantholycosa* delle Alpi Giulie (Araneae-Lycosidae). *Redia* **49**: 165–229.
- MARUSIK, Y. M., GUSEINOV, E. F. & KOPONEN, S. 2003: Spiders (Arachnida: Aranei) of Azerbaijan. 2. Critical survey of wolf spiders (Lycosidae) found in the country with description of three new species and brief review of Palaearctic *Evipa* Simon, 1885. *Arthropoda Selecta* **12**(1): 47–65.
- OROMÍ, P. & GARCÍA, A. 2001: Phylum: Arthropoda. In I. Izquierdo, J. L. Martín, N. Zurita & M. Arachavaleta (eds), *Lista de especies silvestres de Canarias (hongos, plantas y animales terrestres) 2001*: 149–284. Consejería de Política Territorial y Medio Ambiente Gobierno de Canarias.
- OROMÍ, P., GARCÍA, A. & MARCÍAS, N. E. 2004: Phylum: Arthropoda. In I. Izquierdo, J. L. Martín, N. Zurita & M. Arachavaleta (eds), *Lista de especies silvestres de Canarias (hongos, plantas y animales terrestres) 2004*: 155–300. Consejería de Medio Ambiente y Ordenación Territorial, Gobierno de Canarias.
- PLATNICK, N. I. 2008: *The world spider catalog, version 8.5*. <<http://research.amnh.org/entomology/spiders/catalog/index.html>>
- ROBERTS, M. J. 1985: *The spiders of Great Britain and Ireland*, Vol. 1: Atypidae to Theridiosomatidae. Harley Books, Colchester, England. 256 pp.
- ROBERTS, M. J. 1995: *Collins Field Guide: Spiders of Britain and Northern Europe*. HarperCollins, London. 383 pp.
- ROEWER, C. F. 1960: Araneae Lycosaeformia II (Lycosidae) (Fortsetzung und Schluss). *Explor. Parc natn. Upemba Miss. G. F. de Witte* **55**: 519–1040.
- SCHENKEL, E. 1938: Spinnentiere von der Iberischen Halbinsel, gesammelt von Prof. Dr O. Lundblad, 1935. *Ark. Zool.* **30**(A24): 1–29.
- SCHMIDT, G. E. W. 1968: Zur Spinnenfauna von Teneriffa. *Zool. Beitr. (N.F.)* **14**: 387–425.
- SCHMIDT, G. E. W. 1973: Zur Spinnenfauna von Gran Canaria. *Zool. Beitr. (N.F.)* **19**: 347–391.
- SCHMIDT, G. E. W. 1975a: Spinnen von Gomera. *Zool. Beitr. (N.F.)* **21**: 219–231.
- SCHMIDT, G. E. W. 1975b: Spinnen von Teneriffa. *Zool. Beitr. (N.F.)* **21**: 501–515.
- SCHMIDT, G. E. W. 1980: Weitere Spinnen von den Kanaren. *Zool. Beitr. (N.F.)* **26**: 329–339.
- SCHMIDT, G. E. W. 1990: Zur Spinnenfauna der Kanaren, Madeiras und der Azoren. *Stuttg. Beitr. Naturk. (A)* **451**: 1–46.
- SIMON, E. 1876: *Les arachnides de France* **3**: 1–364. Paris.
- SIMON, E. 1882: Études Arachnologiques. 14e mém. XXI. Matériaux pour servir à la faune arachnologique des îles de l'Océan Atlantique (Açores, Madère, Salvages, Canaries, Cap Vert, Sainte-Hélène et Bermudes). *Annls Soc. ent. Fr.* (6)**3**: 259–314.
- SIMON, E. 1898: *Histoire naturelle des araignées* **2**(2): 193–380. Paris.
- SIMON, E. 1937: *Les arachnides de France* **6**(5): 979–1298. Paris, Roret.
- STRAND, E. 1911: Arachniden von der kanarischen Insel Gomera, gesammelt von Herrn Prof. Dr. W. May. *Arch. Naturgesch.* **77**(1): 189–201.
- STRAND, E. 1916: Systematische-faunistische Studien über paläarktische, afrikanische und amerikanische Spinnen des Senckenbergischen Museums. *Arch. Naturgesch.* **81**(A9): 1–153.
- TONGIORGI, P. 1966: Italian wolf spiders of the genus *Pardosa* (Araneae: Lycosidae). *Bull. Mus. comp. Zool. Harv.* **134**: 335–359.
- WUNDERLICH, J. 1984: Zu Taxonomie und Determination europäischer Spinnen-Gattungen. I. Wolfspinnen (Lycosidae) (Arachnida: Araneae). *Neue ent. Nachr.* **7**: 21–29.
- WUNDERLICH, J. 1987: *The spiders of the Canary Islands and Madeiras. Adaptive Radiation, Biogeographie, Revisionen und Neubeschreibungen*. Jörg Wunderlich Verlag; Straubenhardt.
- WUNDERLICH, J. 1992: Die Spinnen-Fauna der Makaronesischen Inseln: Taxonomie, Ökologie, Biogeographie und Evolution. *Beitr. Araneol.* **1**: 1–619.